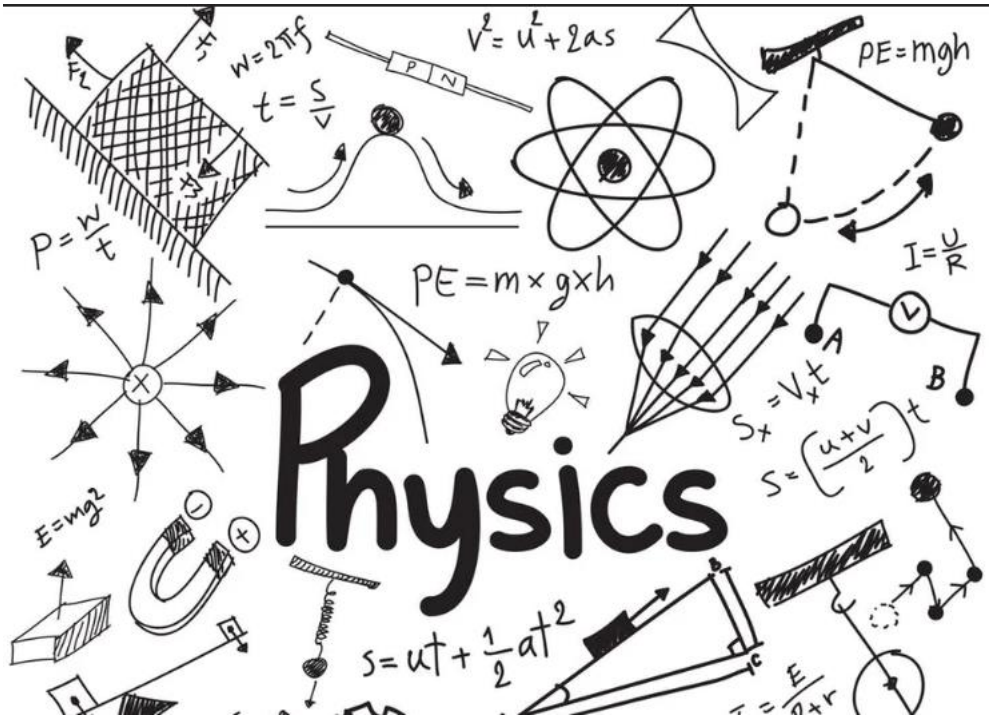
© 2026 Saliha Zaheer. All rights reserved.

PHYSICS CLASS 9TH FBISE MCQS



© 2026 Saliha Zaheer. All rights reserved.

PHYSICS

CLASS 9TH

FBISE

MCQS

© 2026 Saliha Zaheer. All rights reserved.

PHYSICS CLASS 9TH (FBISE)
MULTIPLE CHOICE QUESTIONS (MCQS)

Q1. The SI unit of density is:
(A) kg/m² **(B)** kg/m³
(C) g/cm² **(D)** N/m³

Q2. Speed is defined as:
(A) distance per unit time
(B) displacement per unit time
(C) force per unit area
(D) mass per unit volume

Q3. Which of the following is a derived quantity?
(A) Mass **(B)** Time
(C) Force **(D)** Length

Q4. The area of a circle of radius 7 cm is ($\pi = 22/7$):
(A) 44 cm² **(B)** 154 cm²
(C) 22 cm² **(D)** 49 cm²

Q5. Volume of a cube with side 4 cm is:
(A) 16 cm³ **(B)** 64 cm³
(C) 12 cm³ **(D)** 48 cm³

Q6. A cuboid has length 5 m, breadth 2 m, height 3 m. Its volume is:
(A) 10 m³ **(B)** 30 m³
(C) 15 m³ **(D)** 20 m³

Q7. The volume of a cylinder of radius 3 cm and height 7 cm is ($\pi = 22/7$):
(A) 198 cm³ **(B)** 66 cm³
(C) 132 cm³ **(D)** 231 cm³

Q8. Density is defined as mass per unit:
(A) area **(B)** volume
(C) length **(D)** time

Q9. A body of mass 50 kg occupies a volume of 0.02 m³. Its density is:
(A) 1000 kg/m³ **(B)** 2500 kg/m³
(C) 100 kg/m³ **(D)** 25 kg/m³

Q10. Average speed is calculated as:
(A) total distance × total time
(B) total distance / total time
(C) total time / total distance
(D) distance × time

Q11. A car travels 150 km in 3 h, then 100 km in 2 h. Its average speed is:
(A) 40 km/h **(B)** 50 km/h
(C) 45 km/h **(D)** 60 km/h

Q12. Acceleration from rest is given by:
(A) $a = (v - u)/t$ **(B)** $a = v \times t$
(C) $a = u/t$ **(D)** $a = v + u$

Q13. A body starts from rest and reaches 20 m/s in 4 s. Its acceleration is:
(A) 5 m/s² **(B)** 80 m/s²
(C) 4 m/s² **(D)** 0.2 m/s²

Q14. Which of these is a base (fundamental) quantity?
(A) Speed **(B)** Force
(C) Time **(D)** Density

Q15. The SI unit of length is:
(A) centimetre **(B)** metre
(C) kilometre **(D)** inch

Q16. 5000 grams expressed correctly in scientific notation is:
(A) 5×10^3 g **(B)** 5×10^{-3} g
(C) 50×10^2 g **(D)** 0.5×10^4 g

Q17. The prefix "milli" represents a factor of:
(A) 10^3 **(B)** 10^{-3}
(C) 10^6 **(D)** 10^{-6}

Q18. Two rectangular plates have dimensions 12 cm × 8 cm and 6 cm × 16 cm. Which statement is correct?
(A) First has larger area

© 2026 Saliha Zaheer. All rights reserved.

(B) Second has larger area

(C) Both have equal area

(D) Cannot be determined

Q19. If the radius of a circle is doubled, its area becomes:

(A) 2 times **(B)** 4 times

(C) 8 times **(D)** unchanged

Q20. A metal cube of side 10 cm has a mass of 7.8 kg. Its density in kg/m³ is:

(A) 780 **(B)** 7800

(C) 78 **(D)** 7.8

Q21. Force, being derived from mass and acceleration, is measured in:

(A) Newton **(B)** Joule

(C) Watt **(D)** Pascal

Q22. A train covers the first half of its journey at 60 km/h and the second half at 40 km/h. To find the overall average speed correctly you should use:

(A) Simple average of the two speeds

(B) Total distance divided by total time

(C) Sum of the two speeds

(D) Product of the two speeds

Q23. Which of the following is NOT an SI base quantity?

(A) Mass **(B)** Temperature

(C) Volume **(D)** Time

Q24. A liquid has density 800 kg/m³. The mass of 5 litres (5×10^{-3} m³) of it is:

(A) 4 kg **(B)** 0.4 kg

(C) 40 kg **(D)** 400 kg

Q25. Which pair correctly matches a quantity with its SI unit?

(A) Density – kg/m³ **(B)** Speed – m/s²

(C) Volume – m² **(D)** Area – m³

Q26. A student measures a wooden block as length = 5 cm, breadth = 4 cm, height = 2 cm. What is its volume?

(A) 11 cm³ **(B)** 20 cm³

(C) 40 cm³ **(D)** 80 cm³

Q27. The density of ice is 900 kg/m³ and of water is 1000 kg/m³. A 1 m³ block of ice, on completely melting, occupies (mass conserved):

(A) 1 m³ **(B)** 0.9 m³

(C) 1.11 m³ **(D)** 0.81 m³

Q28. Physical quantities expressed in terms of base quantities are called:

(A) Fundamental quantities

(B) Derived quantities

(C) Scalar quantities

(D) Vector quantities

Q29. The first equation of motion is:

(A) $v = u + at$ **(B)** $s = ut + \frac{1}{2}at^2$

(C) $v^2 = u^2 + 2as$ **(D)** $s = vt$

Q30. In the equations of motion, "u" represents:

(A) final velocity **(B)** initial velocity

(C) uniform velocity **(D)** unit velocity

Q31. A car starting from rest accelerates at 2 m/s² for 5 s. Its final velocity is:

(A) 10 m/s **(B)** 5 m/s

(C) 2.5 m/s **(D)** 20 m/s

Q32. Using $s = ut + \frac{1}{2}at^2$, a body starting from rest with a = 4 m/s² covers in 3 s a distance of:

(A) 12 m **(B)** 18 m

(C) 36 m **(D)** 24 m

Q33. A body moving at 20 m/s decelerates uniformly at 4 m/s² and stops. Distance covered before stopping:

(A) 25 m **(B)** 50 m

(C) 100 m **(D)** 40 m

Q34. Average velocity is given by:

(A) $(u + v)/2$ **(B)** $(u - v)/2$

(C) $u \times v$ **(D)** u/v

Q35. In uniform circular motion, speed is given by:

(A) $v = 2\pi r/T$ **(B)** $v = \pi r^2/T$

(C) $v = 2\pi rT$ **(D)** $v = r/T$

© 2026 Saliha Zaheer. All rights reserved.

Q36. A particle moves in a circle of radius 7 m, completing one revolution in 4 s. Its speed is ($\pi = 22/7$):

(A) 11 m/s **(B)** 22 m/s

(C) 5.5 m/s **(D)** 44 m/s

Q37. Distance covered in uniform motion is given by:

(A) $s = v/t$ **(B)** $s = vt$

(C) $s = v + t$ **(D)** $s = v - t$

Q38. A quantity that has both magnitude and direction is called:

(A) scalar **(B)** vector

(C) distance **(D)** speed

Q39. Displacement is a:

(A) scalar quantity **(B)** vector quantity

(C) fundamental quantity **(D)** derived base quantity

Q40. A car moves 100 m east, then 100 m west. Its displacement is:

(A) 200 m **(B)** 0 m

(C) 100 m **(D)** 50 m

Q41. A body starting from rest moves with uniform acceleration and covers 100 m in 5 s. Its acceleration is:

(A) 4 m/s² **(B)** 8 m/s²

(C) 20 m/s² **(D)** 2 m/s²

Q42. The velocity-time graph of a body moving with uniform acceleration is a:

(A) straight horizontal line

(B) straight line with positive slope

(C) curve

(D) straight line with zero slope

Q43. The area under a speed-time graph gives:

(A) acceleration **(B)** distance

(C) velocity **(D)** rate of displacement

Q44. A ball is thrown upward with initial velocity 30 m/s ($g = 10$ m/s²). Time to reach maximum height is:

(A) 1 s **(B)** 2 s

(C) 3 s **(D)** 4 s

Q45. For the ball in the previous question, the maximum height reached is:

(A) 30 m **(B)** 45 m

(C) 60 m **(D)** 90 m

Q46. A cyclist increases velocity uniformly from 5 m/s to 15 m/s in 4 s. The acceleration is:

(A) 2.5 m/s² **(B)** 5 m/s²

(C) 10 m/s² **(D)** 3.75 m/s²

Q47. In circular motion, T represents:

(A) tension **(B)** time period

(C) torque **(D)** temperature

Q48. A body covering equal distances in equal intervals of time has:

(A) non-uniform motion **(B)** uniform motion

(C) circular motion **(D)** random motion

Q49. A train moving at 72 km/h is brought to rest in 10 s by uniform deceleration. Distance travelled before stopping:

(A) 100 m **(B)** 200 m

(C) 50 m **(D)** 720 m

Q50. Speed is a ____ quantity while velocity is a ____ quantity.

(A) vector, scalar **(B)** scalar, vector

(C) scalar, scalar **(D)** vector, vector

Q51. A car's speedometer stays at a constant 60 km/h while going around a curved road. Is its velocity constant?

(A) Yes, because speed is constant

(B) No, because direction is changing

(C) Yes, because acceleration is zero

(D) No, because speed is changing

Q52. The slope of a distance-time graph represents:

(A) acceleration **(B)** speed

(C) displacement **(D)** force

© 2026 Saliha Zaheer. All rights reserved.

Q53. A stone dropped from a tower reaches the ground in 4 s (g = 10 m/s²). The height of the tower is:

(A) 40 m **(B)** 80 m

(C) 160 m **(D)** 20 m

Q54. Which of the following represents deceleration?

(A) Positive acceleration in the direction of motion

(B) Acceleration opposite to the direction of motion

(C) Zero acceleration **(D)** Constant velocity

Q55. The unit of acceleration is:

(A) m/s **(B)** m/s²

(C) m²/s **(D)** m

Q56. Cars A and B start together. A moves at constant 20 m/s; B starts from rest with acceleration 4 m/s². After how long will B catch up with A?

(A) 5 s **(B)** 8 s

(C) 10 s **(D)** 4 s

Q57. A body moving with constant speed in a circle has:

(A) constant velocity **(B)** changing velocity

(C) zero acceleration

(D) constant acceleration in direction as well

Q58. Newton's Second Law states that force equals:

(A) mass × velocity **(B)** mass × acceleration

(C) mass / acceleration **(D)** mass × displacement

Q59. The SI unit of force is:

(A) kg **(B)** N

(C) J **(D)** W

Q60. A force of 20 N acts on a mass of 4 kg. The resulting acceleration is:

(A) 5 m/s² **(B)** 80 m/s²

(C) 0.2 m/s² **(D)** 24 m/s²

Q61. Weight is given by the formula:

(A) W = m/g **(B)** W = mg

(C) W = m + g **(D)** W = g/m

Q62. The weight of a 5 kg mass on Earth (g = 10 m/s²) is:

(A) 5 N **(B)** 15 N

(C) 50 N **(D)** 0.5 N

Q63. Momentum is the product of:

(A) mass and velocity

(B) mass and acceleration

(C) force and time **(D)** force and distance

Q64. A 2 kg ball moves at 5 m/s. Its momentum is:

(A) 2.5 kg·m/s **(B)** 10 kg·m/s

(C) 7 kg·m/s **(D)** 0.4 kg·m/s

Q65. Impulse equals the change in:

(A) velocity **(B)** momentum

(C) mass **(D)** force

Q66. A force of 10 N acts on a body for 3 s. The impulse produced is:

(A) 3.33 N·s **(B)** 30 N·s

(C) 13 N·s **(D)** 7 N·s

Q67. Frictional force acts:

(A) in the direction of motion

(B) opposite to the direction of motion

(C) perpendicular to motion

(D) in no fixed direction

Q68. The coefficient of friction is defined as:

(A) μ = R/F_f **(B)** μ = F_f/R

(C) μ = F_f × R **(D)** μ = F_f + R

Q69. A block of weight 50 N experiences a friction force of 10 N when pushed. The coefficient of friction is:

(A) 5 **(B)** 0.2

(C) 0.5 **(D)** 2

Q70. Newton's Third Law states that for every action there is:

(A) an equal and opposite reaction

© 2026 Saliha Zaheer. All rights reserved.

(B) an equal reaction in the same direction
(C) no reaction
(D) a reaction twice as large

Q71. A rocket expels gas backward and moves forward. This is best explained by:
(A) Newton's First Law
(B) Newton's Second Law
(C) Newton's Third Law
(D) Law of Conservation of Energy

Q72. "A body remains at rest or in uniform motion unless acted upon by an external force" is:
(A) Newton's First Law
(B) Newton's Second Law
(C) Newton's Third Law
(D) the Law of friction

Q73. Which of the following reduces friction?
(A) Increasing roughness **(B)** Lubrication
(C) Increasing normal force **(D)** Increasing contact area

Q74. A car of mass 1000 kg moving at 20 m/s is brought to rest in 5 s. The average braking force is:
(A) 2000 N **(B)** 4000 N
(C) 500 N **(D)** 100 N

Q75. Inertia is the tendency of a body to:
(A) resist change in its state of motion
(B) accelerate
(C) move in a circle **(D)** lose momentum

Q76. The momentum of a body is conserved when:
(A) an external force acts on it
(B) no external force acts on it
(C) friction is present **(D)** the body accelerates

Q77. A 0.02 kg bullet moving at 400 m/s strikes a target and stops in 0.01 s. The average force exerted by the target is:
(A) 400 N **(B)** 800 N
(C) 80 N **(D)** 8 N

Q78. Which force always opposes relative motion between two surfaces in contact?
(A) Gravitational force **(B)** Frictional force
(C) Magnetic force **(D)** Applied force

Q79. Two bodies of masses 2 kg and 4 kg are acted on by the same force. The ratio $a_1:a_2$ is:
(A) 1:2 **(B)** 2:1
(C) 1:1 **(D)** 4:1

Q80. When a moving bus suddenly stops, passengers fall forward. This is due to:
(A) Newton's Third Law
(B) inertia of motion (Newton's First Law)
(C) friction **(D)** gravity

Q81. The normal reaction (R) in friction studies is the force:
(A) along the surface
(B) perpendicular to the surface
(C) opposite to gravity only
(D) equal to the applied force

Q82. A 6 kg object is pushed with 30 N on a surface with $\mu = 0.3$ ($g = 10\ m/s^2$). The net acceleration is:
(A) 5 m/s^2 **(B)** 2 m/s^2
(C) 3 m/s^2 **(D)** 1.5 m/s^2

Q83. Which quantity is conserved in a collision between two isolated bodies (no external force)?
(A) Kinetic energy always **(B)** Total momentum
(C) Individual velocities **(D)** Force

Q84. Rolling friction is generally ____ than sliding friction.
(A) greater **(B)** less
(C) equal **(D)** unrelated

Q85. A student pushes a heavy box but it does not move despite applying force. This means:
(A) applied force is zero
(B) applied force is less than or equal to the maximum static friction
(C) there is no friction
(D) the box has no mass

© 2026 Saliha Zaheer. All rights reserved.

Q86. Torque is the product of force and:

(A) time

(B) perpendicular distance from the pivot

(C) mass **(D)** velocity

Q87. The formula for torque is:

(A) $\tau = F/d$ **(B)** $\tau = F \times d$

(C) $\tau = F + d$ **(D)** $\tau = d/F$

Q88. A force of 15 N acts at a perpendicular distance of 0.4 m from a pivot. The torque produced is:

(A) 6 N·m **(B)** 37.5 N·m

(C) 15.4 N·m **(D)** 0.4 N·m

Q89. By the principle of moments, a body is in rotational equilibrium when:

(A) sum of clockwise moments exceeds anticlockwise moments

(B) sum of clockwise moments equals sum of anticlockwise moments

(C) net force is zero only

(D) torque is maximum

Q90. A see-saw balances with a 300 N person 2 m from the pivot. How far must a 200 N person sit on the other side to balance it?

(A) 1 m **(B)** 1.5 m

(C) 3 m **(D)** 2 m

Q91. A couple consists of:

(A) two unequal forces acting in the same direction

(B) two equal and opposite parallel forces not acting along the same line

(C) a single force

(D) two forces acting at the same point

Q92. The moment of a couple is calculated as:

(A) F + d **(B)** F × d

(C) F / d **(D)** F − d

Q93. Mechanical Advantage (MA) is defined as:

(A) Effort / Load **(B)** Load / Effort

(C) Load × Effort **(D)** Load − Effort

Q94. A machine lifts a load of 500 N using an effort of 100 N. Its mechanical advantage is:

(A) 0.2 **(B)** 5

(C) 50 **(D)** 600

Q95. Velocity Ratio (VR) is defined as:

(A) distance moved by load / distance moved by effort **(B)** distance moved by effort / distance moved by load

(C) load / effort **(D)** effort / load

Q96. In a machine, the effort moves 8 m while the load moves 2 m. The velocity ratio is:

(A) 0.25 **(B)** 4

(C) 2 **(D)** 16

Q97. A machine has MA = 4 and VR = 5. Its efficiency is:

(A) 80% **(B)** 125%

(C) 20% **(D)** 1.25%

Q98. An ideal (100% efficient) machine has:

(A) MA > VR **(B)** MA < VR

(C) MA = VR **(D)** MA = 0

Q99. In practice, the efficiency of a real machine is always:

(A) greater than 100% **(B)** equal to 100%

(C) less than 100% **(D)** zero

Q100. The condition for translational equilibrium is:

(A) $\Sigma\tau = 0$ only **(B)** $\Sigma F_x = 0$ and $\Sigma F_y = 0$

(C) MA = VR **(D)** F = ma

Q101. The condition for rotational equilibrium is:

(A) $\Sigma F_x = 0$ **(B)** $\Sigma F_y = 0$

(C) $\Sigma\tau = 0$ **(D)** MA = 1

Q102. A uniform beam pivoted at its centre has a 20 N weight at 3 m on the left. Where should a 30 N weight go on the right to balance it?

(A) 1 m **(B)** 2 m

(C) 3 m **(D)** 4.5 m

© 2026 Saliha Zaheer. All rights reserved.

Q103. A lever has a load arm of 0.5 m and effort arm of 2 m. Its velocity ratio is:

(A) 0.25 **(B)** 4

(C) 2.5 **(D)** 1.5

Q104. A crowbar is an example of a:

(A) pulley **(B)** lever

(C) inclined plane **(D)** wheel and axle

Q105. In a first-class lever, the fulcrum is located:

(A) between the load and the effort **(B)** at the load end

(C) at the effort end **(D)** outside the lever

Q106. A machine needs 200 J of input energy to do 150 J of useful work. Its efficiency is:

(A) 75% **(B)** 133%

(C) 50% **(D)** 25%

Q107. For a body in complete (static) equilibrium, both translational and rotational conditions must be:

(A) partially satisfied

(B) satisfied simultaneously

(C) ignored

(D) satisfied only for heavy bodies

Q108. A worker uses a long spanner instead of a short one to loosen a tight nut, because a longer spanner:

(A) reduces the force needed by increasing the moment arm

(B) increases friction

(C) reduces torque

(D) has no effect on torque

Q109. Which of the following increases torque for the same magnitude of force?

(A) Decreasing the perpendicular distance

(B) Increasing the perpendicular distance from the pivot

(C) Applying the force at the pivot

(D) Reducing the force

Q110. A door is easier to push open near the:

(A) hinge **(B)** handle, far from the hinge

(C) middle **(D)** top corner only

Q111. Two forces of 10 N each act in opposite directions at the two ends of a 0.5 m rod, forming a couple. The moment of this couple is:

(A) 5 N·m **(B)** 10 N·m

(C) 0.5 N·m **(D)** 20 N·m

Q112. A pulley system lifts a 150 N load with a 50 N effort at (assumed) 100% efficiency. Its velocity ratio equals:

(A) 1/3 **(B)** 3

(C) 150 **(D)** 50

Q113. Pushing a heavy door close to the hinge instead of at the handle makes it harder to open because:

(A) the perpendicular distance from the pivot decreases, reducing torque

(B) friction increases near the hinge

(C) the force needed decreases

(D) torque becomes independent of distance

Q114. Pressure is defined as force per unit:

(A) volume **(B)** area

(C) length **(D)** mass

Q115. The SI unit of pressure is:

(A) Newton **(B)** Pascal

(C) Joule **(D)** Watt

Q116. A force of 50 N acts on an area of 0.1 m². The pressure exerted is:

(A) 5 Pa **(B)** 500 Pa

(C) 50 Pa **(D)** 0.5 Pa

Q117. Stress is defined as:

(A) Force × Area **(B)** Force / Area

(C) Area / Force **(D)** Force × Length

Q118. Strain is defined as:

(A) change in length / original length

(B) original length / change in length

(C) force / area **(D)** length × area

Q119. A 2 m wire stretches by 0.004 m under load. The strain is:

(A) 0.002 **(B)** 0.02

© 2026 Saliha Zaheer. All rights reserved.

(C) 500 **(D)** 0.2

Q120. Young's Modulus is the ratio of:

(A) strain to stress **(B)** stress to strain

(C) force to area **(D)** area to force

Q121. A material has stress 4×10^6 Pa and strain 0.002. Its Young's Modulus is:

(A) 2×10^9 Pa **(B)** 8×10^3 Pa

(C) 2×10^3 Pa **(D)** 8×10^9 Pa

Q122. Pressure in a liquid at depth h is given by:

(A) $P = h\rho g$ **(B)** $P = h/\rho g$

(C) $P = h\rho/g$ **(D)** $P = h + \rho + g$

Q123. The pressure at a depth of 5 m in water (ρ = 1000 kg/m³, g = 10 m/s²) is:

(A) 5000 Pa **(B)** 50000 Pa

(C) 500 Pa **(D)** 500000 Pa

Q124. Upthrust (buoyant force) is given by:

(A) $F_b = \rho Vg$ **(B)** $F_b = \rho V/g$

(C) $F_b = \rho/(Vg)$ **(D)** $F_b = \rho + V + g$

Q125. A body displaces 0.002 m³ of water (ρ = 1000 kg/m³, g = 10 m/s²). The upthrust on it is:

(A) 2 N **(B)** 20 N

(C) 200 N **(D)** 0.2 N

Q126. Hooke's Law states that within the elastic limit, extension is directly proportional to:

(A) mass **(B)** applied force

(C) area **(D)** time

Q127. A spring with spring constant 200 N/m is stretched 0.05 m. The applied force is:

(A) 4 N **(B)** 10 N

(C) 0.0025 N **(D)** 400 N

Q128. The elastic limit is the point beyond which:

(A) the material returns to its original shape

(B) the material does not return to its original shape after the force is removed

(C) stress becomes zero

(D) strain becomes zero

Q129. Pascal's Law states that pressure applied to a confined liquid is transmitted:

(A) only downward

(B) equally in all directions

(C) only along the surface

(D) only to the container walls

Q130. Which principle is used in a hydraulic press?

(A) Newton's Third Law

(B) Pascal's Law

(C) Hooke's Law

(D) Archimedes' Principle only

Q131. A hydraulic lift has a small piston of area 0.01 m² and large piston of area 0.5 m². A 100 N effort on the small piston produces a force on the large piston of:

(A) 500 N **(B)** 5000 N

(C) 50 N **(D)** 2 N

Q132. A body floats when the upthrust on it is:

(A) less than its weight

(B) greater than its weight

(C) equal to its weight **(D)** zero

Q133. Why does a steel ship float while a steel nail sinks?

(A) The ship displaces more water, generating enough upthrust to balance its weight

(B) Steel in ships is lighter

(C) Nails have no buoyancy

(D) Ships have no weight

Q134. A rectangular block of area 2 m² experiences a perpendicular force of 800 N. The pressure exerted is:

(A) 1600 Pa **(B)** 400 Pa

(C) 0.0025 Pa **(D)** 800 Pa

Q135. Increasing the surface area for the same applied force will:

(A) increase the pressure

(B) decrease the pressure

(C) have no effect on pressure

© 2026 Saliha Zaheer. All rights reserved.

(D) increase the force

Q136. Deformation that disappears when the deforming force is removed is called:

(A) plastic deformation

(B) elastic deformation

(C) permanent deformation

(D) rigid deformation

Q137. The point beyond which a wire, initially obeying Hooke's Law, deforms permanently is called the:

(A) breaking point **(B)** elastic limit

(C) Young's point **(D)** yield of area

Q138. Sharp knives cut better than blunt ones because a sharp edge:

(A) increases the area, decreasing pressure

(B) decreases the area, increasing pressure

(C) has more friction **(D)** has more mass

Q139. The unit of Young's Modulus is the same as that of:

(A) Force **(B)** Pressure/Stress (Pascal)

(C) Area **(D)** Strain (dimensionless)

Q140. A diver at greater depth experiences more pressure than near the surface. This is best explained by:

(A) $P = h\rho g$, pressure increases with depth

(B) pressure decreases with depth

(C) density of water changes randomly

(D) Pascal's Law states pressure is constant everywhere

Q141. Two liquids of densities 800 kg/m³ and 1000 kg/m³ are poured to the same depth of 2 m ($g = 10$ m/s²). The difference in pressure at the bottom is:

(A) 2000 Pa **(B)** 4000 Pa

(C) 1000 Pa **(D)** 200 Pa

Q142. A spring stretches 2 cm under a force of 8 N. Its spring constant is:

(A) 4 N/m **(B)** 400 N/m

(C) 40 N/m **(D)** 0.25 N/m

Q143. Work is defined as:

(A) Force × displacement × cosθ **(B)** Force / displacement

(C) Force + displacement **(D)** Mass × acceleration

Q144. The SI unit of work is:

(A) Watt **(B)** Joule

(C) Newton **(D)** Pascal

Q145. A force of 20 N moves an object 5 m in the direction of the force. The work done is:

(A) 4 J **(B)** 25 J

(C) 100 J **(D)** 15 J

Q146. A force of 10 N is applied at 60° to a displacement of 4 m ($\cos 60° = 0.5$). The work done is:

(A) 40 J **(B)** 20 J

(C) 4 J **(D)** 14 J

Q147. When the force is perpendicular to the displacement, the work done is:

(A) maximum **(B)** zero

(C) negative **(D)** equal to the force

Q148. Power is defined as the rate of doing:

(A) force **(B)** work

(C) mass **(D)** velocity

Q149. The SI unit of power is:

(A) Joule **(B)** Watt

(C) Newton **(D)** Pascal

Q150. A machine does 600 J of work in 20 s. Its power is:

(A) 30 W **(B)** 12000 W

(C) 3 W **(D)** 0.03 W

Q151. Kinetic energy is given by the formula:

(A) $KE = mgh$ **(B)** $KE = \frac{1}{2}mv^2$

(C) $KE = mv$ **(D)** $KE = Fd$

Q152. A 4 kg object moves at 3 m/s. Its kinetic energy is:

(A) 6 J **(B)** 12 J

(C) 18 J **(D)** 36 J

© 2026 Saliha Zaheer. All rights reserved.

Q153. Potential energy due to height is given by:

(A) PE = ½mv² **(B)** PE = mgh

(C) PE = mg/h **(D)** PE = Fd

Q154. A 2 kg object is raised to a height of 5 m (g = 10 m/s²). Its potential energy is:

(A) 10 J **(B)** 50 J

(C) 100 J **(D)** 25 J

Q155. Mechanical energy is the sum of:

(A) work and power **(B)** kinetic and potential energy

(C) force and mass **(D)** stress and strain

Q156. A 1 kg ball falls from 10 m (g = 10 m/s²). Just before hitting the ground, its kinetic energy equals (ignoring air resistance):

(A) 10 J **(B)** 100 J

(C) 50 J **(D)** 1 J

Q157. The Law of Conservation of Energy states that energy:

(A) can be created but not destroyed

(B) can be destroyed but not created

(C) cannot be created or destroyed, only transformed

(D) is always increasing

Q158. Efficiency of a machine is calculated as:

(A) (Total input / Useful output) × 100%

(B) (Useful output / Total input) × 100%

(C) Useful output × Total input

(D) Useful output − Total input

Q159. A machine has an energy input of 500 J and useful output of 350 J. Its efficiency is:

(A) 70% **(B)** 35%

(C) 50% **(D)** 143%

Q160. A moving car possesses:

(A) only potential energy

(B) only kinetic energy

(C) both kinetic and potential energy

(D) no energy

Q161. If the velocity of a moving object is doubled, its kinetic energy becomes:

(A) 2 times **(B)** 4 times

(C) 8 times **(D)** unchanged

Q162. A crane lifts a 500 N load through 4 m in 10 s. The power developed is:

(A) 200 W **(B)** 2000 W

(C) 20 W **(D)** 50 W

Q163. Which form of energy is stored in a stretched spring?

(A) Kinetic energy**(B)** Elastic potential energy

(C) Chemical energy **(D)** Thermal energy

Q164. A pendulum bob swings from its highest point A to lowest point B. At B, compared to A:

(A) KE is maximum, and PE is minimum

(B) KE is minimum, and PE is maximum

(C) both KE and PE are zero

(D) both KE and PE are maximum

Q165. No machine can be 100% efficient in practice mainly because of:

(A) conservation of energy

(B) energy losses due to friction and other factors

(C) increase in mass

(D) increase in mechanical advantage

Q166. 1 horsepower (hp) is equal to:

(A) 100 W **(B)** 746 W

(C) 1000 W **(D)** 550 W

Q167. A student lifts a 10 kg box to a height of 2 m in 4 s (g = 10 m/s²). The power exerted is:

(A) 50 W **(B)** 5 W

(C) 20 W **(D)** 200 W

Q168. Two objects of masses 2 kg and 8 kg have the same kinetic energy. The ratio of their velocities $v_1:v_2$ is:

(A) 1:2 **(B)** 2:1

(C) 4:1 **(D)** 1:4

© 2026 Saliha Zaheer. All rights reserved.

Q169. Work done against gravity while lifting an object depends on:

(A) speed of lifting

(B) mass, gravity, and height only

(C) time taken **(D)** shape of the object

Q170. When a ball is thrown vertically upward, at the highest point (ignoring air resistance):

(A) KE is maximum

(B) PE is maximum and KE is zero

(C) both KE and PE are maximum

(D) both are zero

Q171. An electric motor rated 1000 W delivers only 750 W of useful mechanical power due to losses. Its efficiency is:

(A) 133% **(B)** 75%

(C) 25% **(D)** 750%

Q172. Density is defined as:

(A) mass × volume **(B)** mass / volume

(C) volume / mass **(D)** weight / volume

Q173. Relative density is defined as the ratio of:

(A) density of a substance to density of air

(B) density of a substance to density of water

(C) volume of a substance to volume of water **(D)** mass of a substance to mass of water

Q174. A substance has density 2700 kg/m³. Its relative density (water = 1000 kg/m³) is:

(A) 0.37 **(B)** 2.7

(C) 27 **(D)** 270

Q175. The formula to convert Celsius to Kelvin is:

(A) $K = °C - 273$ **(B)** $K = °C + 273$

(C) $K = 273/°C$ **(D)** $K = °C \times 273$

Q176. A temperature of 100°C in Kelvin is:

(A) 100 K **(B)** 273 K

(C) 373 K **(D)** 173 K

Q177. Convert 300 K to Celsius:

(A) 27°C **(B)** 573°C

(C) 73°C **(D)** −27°C

Q178. Thermal (linear) expansion is given by the formula:

(A) $\Delta L = L\alpha/\Delta T$ **(B)** $\Delta L = L\alpha\Delta T$

(C) $\Delta L = L + \alpha\Delta T$ **(D)** $\Delta L = \alpha/(L\Delta T)$

Q179. A metal rod of length 2 m with $\alpha = 1.2 \times 10^{-5}$ /K is heated through 50 K. The increase in length is:

(A) 1.2×10^{-3} m **(B)** 1.2×10^{-4} m

(C) 6×10^{-4} m **(D)** 6×10^{-5} m

Q180. The volumetric expansion coefficient β is approximately related to the linear expansion coefficient α by:

(A) $\beta \approx \alpha/3$ **(B)** $\beta \approx 3\alpha$

(C) $\beta \approx \alpha^2$ **(D)** $\beta \approx \alpha + 3$

Q181. The formula for heat energy absorbed or released is:

(A) $Q = mc/\Delta T$ **(B)** $Q = mc\Delta T$

(C) $Q = m + c + \Delta T$ **(D)** $Q = mc^2\Delta T$

Q182. The heat required to raise the temperature of 2 kg of water (c = 4200 J/kg·K) by 5 K is:

(A) 4200 J **(B)** 21000 J

(C) 42000 J **(D)** 8400 J

Q183. Which substance has the highest specific heat capacity among common materials?

(A) Iron **(B)** Water

(C) Copper **(D)** Aluminium

Q184. A 0.5 kg piece of metal absorbs 4500 J of heat and its temperature rises by 10 K. Its specific heat capacity is:

(A) 900 J/kg·K **(B)** 90 J/kg·K

(C) 45000 J/kg·K **(D)** 450 J/kg·K

Q185. At absolute zero (0 K):

(A) molecular motion is maximum

(B) molecular motion is theoretically minimum

(C) temperature is 273°C

(D) water boils

Q186. The density of water is maximum at:

(A) 0°C **(B)** 4°C

© 2026 Saliha Zaheer. All rights reserved.

(C) 100°C **(D)** −4°C

Q187. Which of the following has the greatest density typically?

(A) Wood **(B)** Water

(C) Iron **(D)** Air

Q188. A substance with relative density less than 1 will:

(A) sink in water **(B)** float on water

(C) dissolve in water

(D) have no interaction with water

Q189. Liquids A and B have relative densities 0.8 and 1.2 respectively. Which statement is correct?

(A) A is denser than water, B is less dense

(B) A floats on water, B sinks in water

(C) Both float on water

(D) Both sink in water

Q190. Bridges and railway tracks have gaps left between sections mainly to allow for:

(A) decoration **(B)** thermal expansion

(C) reduced weight **(D)** reduced cost

Q191. When a metal ball is heated, its volume:

(A) decreases **(B)** increases

(C) remains constant **(D)** becomes zero

Q192. A liquid of volume 2 m^3 with $\beta = 6 \times 10^{-4}$/K is heated through 20 K. The increase in volume is:

(A) 0.024 m^3 **(B)** 0.0024 m^3

(C) 0.24 m^3 **(D)** 2.4 m^3

Q193. The Kelvin scale is also known as the:

(A) relative scale **(B)** absolute temperature scale

(C) Celsius scale **(D)** Fahrenheit scale

Q194. Ice, water, and steam represent three states corresponding respectively to:

(A) increasing temperature/heat content

(B) decreasing temperature/heat content

(C) the same temperature

(D) unrelated states

Q195. A metal lid on a glass jar becomes easier to open after running hot water over it because:

(A) the metal contracts more than the glass

(B) the metal expands more than the glass, loosening the lid

(C) the glass expands more than the metal

(D) both contract equally, with no effect

Q196. Specific heat capacity is the heat required to raise the temperature of a unit mass of a substance by:

(A) 1°C (or 1 K) **(B)** 100°C

(C) its melting point **(D)** 0°C

Q197. 500 g of a substance with specific heat capacity 400 J/kg·K absorbs 6000 J of heat. The rise in temperature is:

(A) 15 K **(B)** 30 K

(C) 3 K **(D)** 1.5 K

Q198. A substance denser than water has a relative density:

(A) less than 1 **(B)** equal to 1

(C) greater than 1 **(D)** equal to 0

Q199. The human body temperature, 37°C, expressed in Kelvin is:

(A) 310 K **(B)** 236 K

(C) 300 K **(D)** 273 K

Q200. A thermometer reads 20°C in a room. For a physics calculation requiring absolute temperature, what value (Kelvin) should be used?

(A) 20 K **(B)** 293 K

(C) 253 K **(D)** 273 K

© 2026 Saliha Zaheer. All rights reserved.

ANSWER KEY

1. **B**	2. **A**	3. **C**	4. **B**	5. **B**	6. **B**	7. **A**	8. **B**	9. **B**	10. **B**
11. **B**	12. **A**	13. **A**	14. **C**	15. **B**	16. **A**	17. **B**	18. **C**	19. **B**	20. **B**
21. **A**	22. **B**	23. **C**	24. **A**	25. **A**	26. **C**	27. **B**	28. **B**	29. **A**	30. **B**
31. **A**	32. **B**	33. **B**	34. **A**	35. **A**	36. **A**	37. **B**	38. **B**	39. **B**	40. **B**
41. **B**	42. **B**	43. **B**	44. **C**	45. **B**	46. **A**	47. **B**	48. **B**	49. **A**	50. **B**
51. **B**	52. **B**	53. **B**	54. **B**	55. **B**	56. **C**	57. **B**	58. **B**	59. **B**	60. **A**
61. **B**	62. **C**	63. **A**	64. **B**	65. **B**	66. **B**	67. **B**	68. **B**	69. **B**	70. **A**
71. **C**	72. **A**	73. **B**	74. **B**	75. **A**	76. **B**	77. **B**	78. **B**	79. **B**	80. **B**
81. **B**	82. **B**	83. **B**	84. **B**	85. **B**	86. **B**	87. **B**	88. **A**	89. **B**	90. **C**
91. **B**	92. **B**	93. **B**	94. **B**	95. **B**	96. **B**	97. **A**	98. **C**	99. **C**	100. **B**
101. **C**	102. **B**	103. **B**	104. **B**	105. **A**	106. **A**	107. **B**	108. **A**	109. **B**	110. **B**
111. **A**	112. **B**	113. **A**	114. **B**	115. **B**	116. **B**	117. **B**	118. **A**	119. **A**	120. **B**
121. **A**	122. **A**	123. **B**	124. **A**	125. **B**	126. **B**	127. **B**	128. **B**	129. **B**	130. **B**
131. **B**	132. **C**	133. **A**	134. **B**	135. **B**	136. **B**	137. **B**	138. **B**	139. **B**	140. **A**
141. **B**	142. **B**	143. **A**	144. **B**	145. **C**	146. **B**	147. **B**	148. **B**	149. **B**	150. **A**
151. **B**	152. **C**	153. **B**	154. **C**	155. **B**	156. **B**	157. **C**	158. **B**	159. **A**	160. **B**
161. **B**	162. **A**	163. **B**	164. **A**	165. **B**	166. **B**	167. **A**	168. **B**	169. **B**	170. **B**
171. **B**	172. **B**	173. **B**	174. **B**	175. **B**	176. **C**	177. **A**	178. **B**	179. **A**	180. **B**
181. **B**	182. **C**	183. **B**	184. **A**	185. **B**	186. **B**	187. **C**	188. **B**	189. **B**	190. **B**
191. **B**	192. **A**	193. **B**	194. **A**	195. **B**	196. **A**	197. **B**	198. **C**	199. **A**	200. **B**

© 2026 Saliha Zaheer. All rights reserved.

Complete Formula Sheet

Chapter 1 (Physical Quantities and Measurement)

Speed	$v = d / t$
Average speed	$v_{avg} = \text{total } d / \text{total } t$
Density	$\rho = m / V$
Area — Rectangle	$A = l \times b$
Area — Circle	$A = \pi r^2$
Volume — Cube	$V = a^3$
Volume — Cuboid	$V = l \times b \times h$
Volume — Cylinder	$V = \pi r^2 h$
Acceleration (from rest)	$a = (v - u) / t$

Chapter 2 (Kinematics)

Equations of Motion

1st equation	$v = u + at$
2nd equation	$s = ut + \frac{1}{2} a t^2$
3rd equation	$v^2 = u^2 + 2as$

Other Relations

Average velocity	$v_{avg} = (u + v) / 2$
Acceleration	$a = (v - u) / t$
Uniform circular motion	$v = 2\pi r / T$
Distance in uniform motion	$s = v t$

Chapter 3 (Dynamics I)

Newton's Second Law	$F = m a$
Weight	$W = m g$
Momentum	$p = m v$
Impulse	$I = F \times t = \Delta p$
Frictional force	$F_f = \mu R$
Coefficient of friction	$\mu = F_f / R$
Newton's Third Law	Action = − Reaction

Chapter 4 (Dynamics II)

Moment of force (Torque)	$\tau = F \times d$
Principle of moments	Σclockwise moments=Σanticlockwise moments
Moment of a couple	Moment = $F \times d$
Mechanical Advantage	MA = Load / Effort
Velocity Ratio	VR = Distance by effort / Distance by load
Efficiency	$\eta = (MA / VR) \times 100\%$
Equilibrium conditions	$\Sigma F_x = 0$, $\Sigma F_y = 0$, $\Sigma \tau = 0$

© 2026 Saliha Zaheer. All rights reserved.

Chapter 5 (Pressure and Deformation in Solids)

Pressure	P = F / A
Stress	Stress = Force / Area
Strain	Strain = Change in length / Original length
Young's Modulus	Y = Stress / Strain
Pressure in liquids	P = h ρ g
Upthrust	F_b = ρ V g
Hooke's Law	F = k x

Chapter 6 (Work and Energy)

Work	W = F × d × cos θ
Power	P = W / t
Kinetic Energy (KE)	KE = ½ m v²
Potential Energy (PE)	PE = m g h
Mechanical Energy (E)	E = KE + PE
Efficiency	η = (Useful energy output / Total energy input) × 100%

Chapter 7 (Density and Temperature)

Density	ρ = m / V
Relative density (RD)	RD = Density of substance / Density of water
Temperature: °C → K	K = °C + 273
Temperature: K → °C	°C = K − 273
Thermal (linear) expansion	ΔL = L α ΔT
Volumetric expansion	ΔV = V β ΔT (β ≈ 3α)
Heat energy	Q = m c ΔT

© 2026 Saliha Zaheer. All rights reserved.

Important Constants and Symbols

g	Acceleration due to gravity	9.8 m/s²
G	Universal Gravitational Constant	6.67×10^{-11} N·m²/kg²
π	Pi	3.1416
ρ (water)	Density of water	1000 kg/m³
1 hp	Horsepower	746 W
k	Spring constant	N/m
α	Coefficient of linear expansion	1/K
T	Time period	s